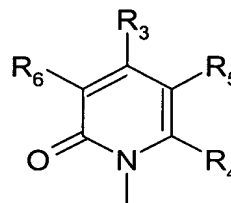
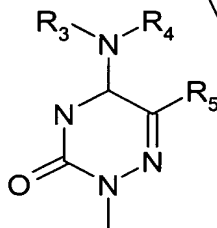
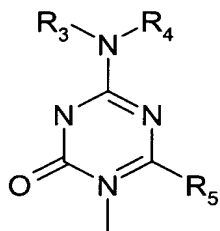
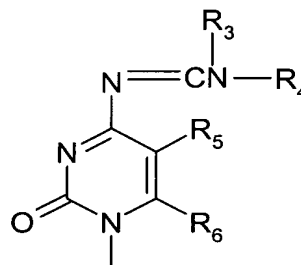
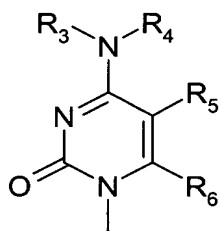
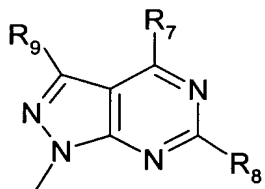
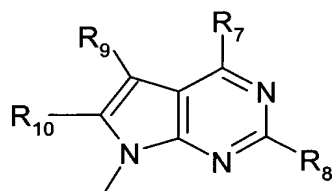
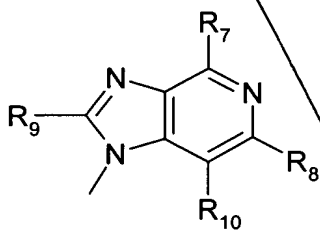
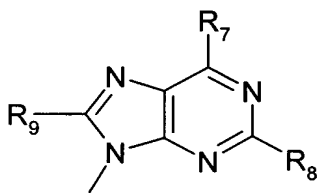
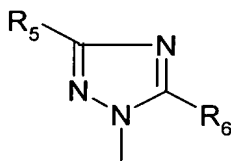
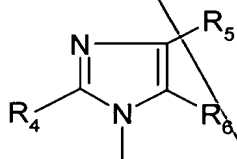
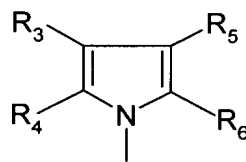
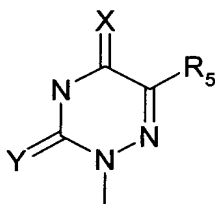
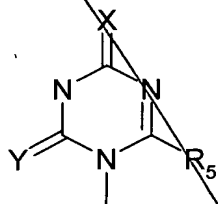
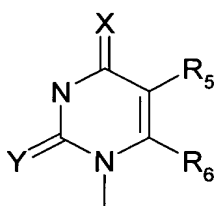


wherein

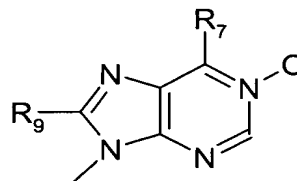
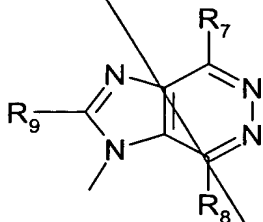
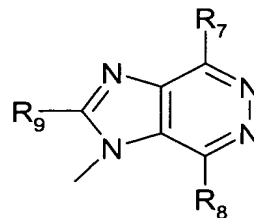
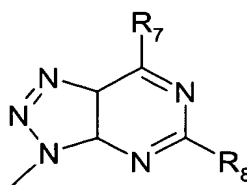
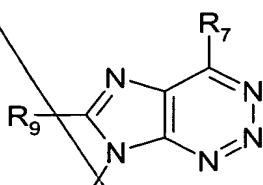
$R_2$  is selected from the following group:



01  
Sub  
DS



Ch  
DS



X is oxygen or sulfur;

Y is oxygen or sulfur;

R<sub>3</sub> and R<sub>4</sub> are independently selected from hydrogen, hydroxyl, amino, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, and C<sub>1-10</sub> acyl or aracyl;

R<sub>5</sub> and R<sub>6</sub> are independently selected hydrogen, halogen, hydroxyl, amino, cyano, carboxy, carbamoyl, alkoxycarbonyl, hydroxymethyl, trifluoromethyl, thioaryl, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, and C<sub>1-10</sub> acyloxy;

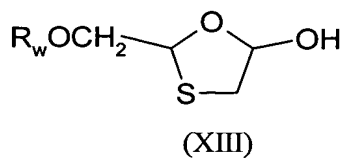
R<sub>7</sub> and R<sub>8</sub> are independently selected from hydrogen, hydroxy, alkoxy, thiol, thioalkyl, amino, halogen, cyano, carboxy, alkoxycarbonyl, carbamoyl, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, and C<sub>1-10</sub> acyloxy; and

R<sub>9</sub> and R<sub>10</sub> are independently selected from the hydrogen, hydroxy, alkoxy, amino, halogen, azido, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, and C<sub>1-10</sub> acyloxy.

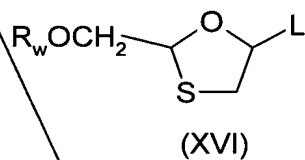
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75. A process comprising:

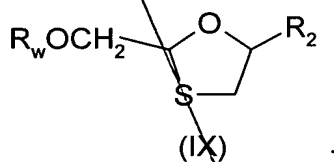
reacting a mercaptoacetaldehyde with a compound of formula  $R_wOCH_2CHO$ , under neutral or basic conditions, wherein  $R_w$  is hydrogen or a hydroxyl protecting group to obtain a compound of formula (XIII)



converting the hydroxyl of the compound of formula (XIII) to a leaving group L to obtain a compound of formula (XIV):



reacting the compound of formula (XIV) with a silylated purine or pyrimidine base or derivative thereof  $R_2$ , in the presence of a Lewis acid, said leaving group is displaced, to produce a compound of formula (IX):

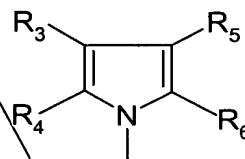
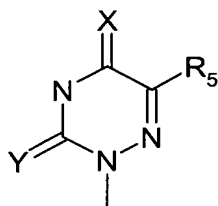
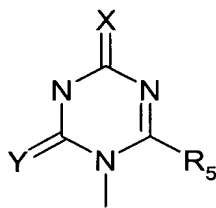
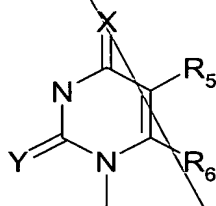
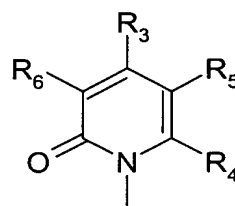
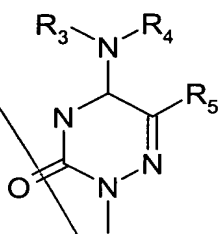
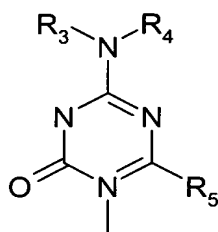
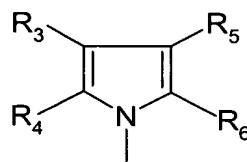
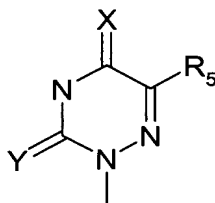
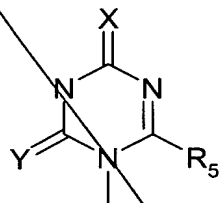


wherein

$Z$  is S, and

$R_2$  is selected from the following group:

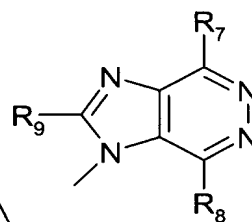
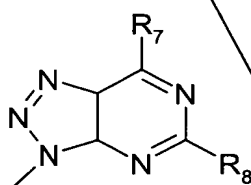
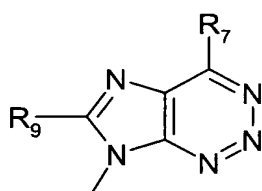
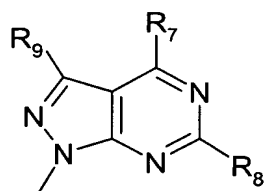
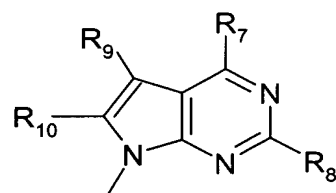
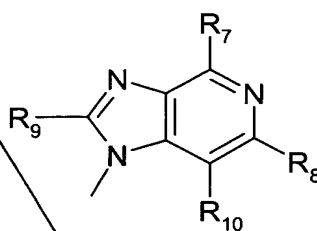
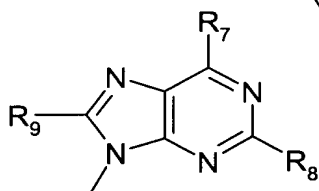
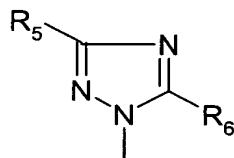
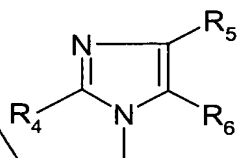
Sub  
DS



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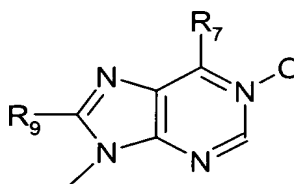
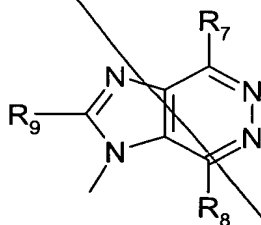
C1

Sub  
DS



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ET  
Sub  
DS



X is oxygen or sulfur;

Y is oxygen or sulfur;

R<sub>3</sub> and R<sub>4</sub> are independently selected from hydrogen, hydroxyl, amino, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, and C<sub>1-10</sub> acyl or aracyl;

R<sub>5</sub> and R<sub>6</sub> are independently selected hydrogen, halogen, hydroxyl, amino, cyano, carboxy, carbamoyl, alkoxy, carbonyl, hydroxymethyl, trifluoromethyl, thioaryl, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, and C<sub>1-10</sub> acyloxy;

R<sub>7</sub> and R<sub>8</sub> are independently selected from hydrogen, hydroxy, alkoxy, thiol, thioalkyl, amino, halogen, cyano, carboxy, alkoxy, carbonyl, carbamoyl, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, and C<sub>1-10</sub> acyloxy; and

R<sub>9</sub> and R<sub>10</sub> are independently selected from the hydrogen, hydroxy, alkoxy, amino, halogen, azido, C<sub>1-6</sub> alkyl, C<sub>2-6</sub> alkenyl, C<sub>2-6</sub> alkynyl, and C<sub>1-10</sub> acyloxy.